BMP #144 - Topsoiling

DESCRIPTION

This BMP includes the placement of topsoil or other suitable plant growth material over disturbed lands to provide a suitable soil medium for vegetative growth and a supply of native or locally occurring seeds and propagules. Topsoiling may involve bringing in soils from off site or merely replacing fertile topsoils that were stripped and stockpiled during earlier site development activities.

Targeted Pollutants

- ● Sediment
- ○ Phosphorus
- ○ Trace metals
- ○ Bacteria
- ○ Petroleum hydrocarbons

APPLICATIONS

Topsoiling is recommended on slopes 2:1 or flatter where the native soil is unsuitable for vegetative growth. It is an effective way of improving plant establishment on sites where moisture, nutrients, or pH levels are low, or where the remaining soil is too shallow to support root systems.

Physical Limits

Drainage area	unlimited
Max slope	50%
Min bedrock depth	3 ft
Min water table	2 ft
SCS soil type	N/A
Freeze/Thaw	fair
Drainage/Flood control	no

LIMITATIONS

Be careful not to apply topsoil over a subsoil of contrasting texture. For instance, a clay-like topsoil placed over a sandy soil may cause the topsoil to slough as water flows between the two soil layers of different permeability. Also, topsoil should not be applied when the subsoil is frozen or extremely wet.

DESIGN PARAMETERS

Plan to maintain the existing or established grade of the subsoil. The topsoil should be uniformly distributed at a minimum compacted depth of 2 inches (50 mm) on slopes 3:1 or steeper, and 4 inches (100 mm) deep on flatter slopes. The soil should be a loam, sandy loam, clay loam, silt loam, sandy clay loam, or other mixture approved by an agronomist. It should be free of subsoil, refuse, sticks, noxious weed seeds, other extraneous materials, and stones larger than 1.5 inches (40 mm) diameter.

Topsoil can either be obtained commercially or stripped, stockpiled, and replaced on the construction site. Stockpiled topsoils should undergo a laboratory analysis to determine organic content, pH, and soluble salts. A pH of 6.0 to 7.5 and organic content of not less than 1.5 percent by weight is recommended. Where soil pH is less than 6.0, lime may be applied to adjust pH to 6.5 or higher. Any soils having soluble salt content greater than 500 parts per million should not be used.

If desired, it is possible to place a thin layer of topsoil 1.2 to 2 inches (30 to 50 mm) thick on benched slopes. In such applications, it is important not to apply so much topsoil that the value of the benches is destroyed. This method is especially valuable

on rocky benches, especially on south- or west-facing slopes, however, proper placement of the soil is often a problem. In some cases, soil has been bucketed onto slopes. This produces an uneven spread and the quantity is hard to control. Soil can also be blown onto the slope using a snow blower. In that case, organic matter can be mixed with the soil, but the soil should be screened to remove any rocks larger than 2 inches (50 mm). The advantage is that the amount of soil needed is much less and it can be spread very rapidly on the horizontal surfaces. The soil may need some form of stabilization before the next rain event. Consider whether mulch, matting, geotextiles or seeding is required and when.

CONSTRUCTION GUIDELINES

The following guidelines apply to the placement of topsoil:

- The existing or established grade of subsoil should be maintained.
- Lime may be uniformly applied over designated areas where subsoil is highly acidic or heavy in clay content.
- Prior to spreading topsoil, loosen the subgrade by discing (or other method) to a depth of 2 inches (50 mm) to permit bonding of subsoil to topsoil. Tracking a bulldozer vertically over the slope will pack the soil and create horizontal erosion check slots to prevent topsoil from sliding down the slope.
- Spread the topsoil uniformly at a minimum compacted depth of 2 inches (50 mm) on 1:3 or steeper slopes and 4 inches (100 mm) on flatter slopes. A depth of 6 to 12 inches (150 to 300 mm) is preferred. Any surface irregularities should be corrected in an effort to prevent formation of water-holding depressions.
- Where quantities of stockpiled topsoil on site are limited, it is more desirable to cover all areas of exposed subsoil to a lesser depth than to cover partial areas to the suggested minimum depth of 3.1 inches (80 mm).
- Topsoil should not be placed when the subgrade is frozen, excessively wet or in a condition that may otherwise be detrimental to proper grading or proposed sodding or vegetation establishment.

MAINTENANCE

Periodically and after major storm events, inspect, repair, and reseed as necessary to control slope erosion and subsequent topsoil losses.